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*British Ants, Their Life-History and Classification.* By H. ST. J. K. DONISTHORPE. Plymouth: Wm. Brendon & Son, Ltd., 1915. Pp. xv + 373, 18 pls. and 92 text-figs.

In this attractive volume we are given for the first time an exhaustive monograph of the ant-fauna of Great Britain, the result of many years of patient labor by one who served his biological apprenticeship as an ardent student of myrmecophiles. The volume serves also as a useful manual for the study of ants in general since it contains concise chapters on the anatomy, development and behavior of ants and the methods of keeping and studying them in artificial nests. Naturally the greater portion of the work is devoted to a detailed account of each species known to be indigenous to Britain, under several heads, beginning with the original description, the synonymy, a good modern description and the geographical range, and ending with full ethological notes and a list of the myrmecophiles that have been taken in the nests of each form. The synonymy has been compiled with great care and from many old and obscure sources, often inaccessible to the American student. The work concludes with a list of species introduced into Britain, compiled in great part from scattered records of specimens taken in the hothouses of Kew Gardens and in dwellings, lumber yards, etc., in other parts of the islands. Among these introduced ants are a few dangerous pests, notably the Argentine ant (*Iridomyrmex humilis*), which was found "in vast numbers in a house in Windsor Park, Belfast, in 1900, where it had been observed

for eighteen months," and in the Botanic Gardens of Edinburgh in 1912, and *Pheidole megacephala*, which in many tropical regions completely destroys all insects in its environment, except the Coccids, and disseminates and attends these to the great injury of many kinds of cultivated plants.

One is surprised to find the indigenous ant-fauna of Great Britain so meager compared with that of continental Europe. Only 40 forms are recorded by Donisthorpe, comprising 28 species, 14 subspecies (often ranked as species) and 8 varieties, representing only about one third of the central European fauna. Switzerland, a much smaller area than Great Britain and one which has been very carefully explored by Forel, has 116 indigenous Formicidæ, comprising 63 species, 17 subspecies and 36 varieties. The British fauna not only lacks any species peculiar to itself, but is also deficient in a whole series of genera and subgenera known to occur in Central Europe (*Strongylognathus*, *Harpagoxenus*, *Temnothorax*, *Neomyrma*, *Crematogaster*, *Pheidole*, *Messor*, *Aphænogaster*, *Dolichoderus*, *Bothriomyrmex*, *Plagiolepis*, *Polyergus*, *Camponotus* and *Colobopsis*). Most surprising is the absence of any species of the great cosmopolitan genus *Camponotus* in Great Britain. The carpenter ant (*C. herculeanus*), which is common throughout the northern portions of North American and Eurasia, could hardly be expected to be absent, but Donisthorpe shows that all records of its indigenous occurrence in Great Britain are very dubious. Some of the continental genera such as *Strongylognathus*, *Harpagoxenus*, *Bothriomyrmex* and *Polyergus* are rare and parasitic and it is very doubtful whether they will ever be found in the British Isles. Nevertheless, the singular parasitic *Anergates atratus* was not discovered there till 1912, when

it was taken by Crawley and Donisthorpe in New Forest, Hants.

Donisthorpe does not consider the interesting questions suggested by the relations of the British to the continental ant faunas, especially the reasons for the depauperate condition of the former, for not only are there few species in Britain, but these are represented by comparatively few colonies and therefore individuals. Insular ant-faunas in nearly all parts of the world are small, either because many islands are of too recent geological origin to have received many species by immigration (*e. g.*, Cuba and other West Indian Islands), or because their original Mesozoic or early Tertiary faunas have been greatly depleted or entirely obliterated by glaciation. Thus Iceland is entirely destitute of ants, and the ant-faunas of Great Britain and New Zealand are undoubtedly the meager survivors of glaciation. But when we consider that both of these regions have mild, temperate climates and an abundant vegetation, we find it more difficult to understand why the small number of surviving species is not represented by a great number of individuals, especially when we remember that Australia, North Africa and North America, which are, at least in part, much more arid and may have more severe, continental winters, nevertheless, have abundant ant-faunas. A consideration of such facts seems to indicate that moist, cloudy, cool temperate climates are very unfavorable to ants and that this may account for the meager development of individuals in Great Britain and New Zealand. Even on continents we may notice the same dearth of ants in cool, humid regions, as, *e. g.*, in the Selkirk Mountains of British Columbia as compared with the Rockies of Alberta. The former mountains, which are very humid and covered with a rich vegetation, have a much poorer ant fauna than the latter, which are drier and

have a more meager flora, though sufficiently moist and warm to afford optimum conditions for ants during the summer months.

In addition to a great amount of taxonomic and purely descriptive material Donisthorpe's book contains many original observations on the behavior of ants, especially in the sections devoted to the species of *Lasius* (notably *L. fuliginosus* and *umbratus*) and the blood-red slavemaker (*Formica sanguinea*). The illustrations are excellent and abundant and, with few exceptions, have been specially prepared for the volume. Most interesting are the figures of the gynandromorphs and ergatan-dromorphs of *Formica rufibarbis*, *F. sanguinea* and *Myrmica scabrinodis* (Pl. IV. and Figs. 45 and 46) and of the myrmithogyne of *Lasius flavus* (Fig. 47).

The only matter open to criticism in the volume is, perhaps, Donisthorpe's too hasty adoption of the generic name *Donisthorpea* for *Lasius*. The genus *Lasius* was based by Fabricius in 1804 on *Formica nigra* L., the common garden ant, one of the most abundant insects of the northern hemisphere, and since that date universally known, both in technical and popular literature, as *Lasius niger*. In 1914 Morice and Durrant exhumed a paper by Jurine published in 1801, in which the name *Lasius* was assigned to a genus of bees. The authors therefore renamed the ant-genus *Donisthorpea*. It seems, however, that there is serious doubt concerning the status of Jurine's paper, so that we need not be in a hurry to make this deplorable change in our nomenclature. At any rate, it will probably be difficult to persuade the majority of living myrmécologists, including Forel, Emery and the reviewer, to substitute *Donisthorpea nigra* for *Lasius niger*, a name which for more than a century has been almost as much of a household term as *Musca domestica*, *Equus caballus* and *Canis familiaris*. W. M. WHEELER